ABSTRACT

Synchronous manufacturing is an operations management approach, based on the theory of constraints. Operational methodologies which do not distinguish constraints in a system, inevitably result in inappropriate decisions about organizing them. In any organization, there are always some constraints which limit the timely realization of the maximum output. Synchronous manufacturing views an organization, not as a system consisting of collection of resources existing in isolation, but as a chain of resources which are linked by the processes they perform to work in tandem towards common objectives.

Synchronous manufacturing embodies various concepts related to focusing and synchronizing production control around bottleneck resources. These concepts are more commonly known as theory of constraints, bottleneck management or The Goal system. The main focus of synchronous manufacturing is efficient utilization of those resources that are most constraining and prevent additional production. In many cases, managers are engrossed in handling their daily routines and are less aware of the process and its dependencies. It’s meant to convey that there is very less time for them to start analysis about their requirement and process parameters. It is not evident that attempts to measure this kind of unexpected delays and its implications through a mathematical model and a software tool is adopted, at least in Indian industries.

After detailed study of different available operational strategies, synchronous manufacturing Philosophy was planned for study, apply and implement at different scenarios in the engineering environment. Under this context, our laboratory and field investigations were planned for study. Here, an attempt is made by me to critically analyze and to measure the Synchronous parameters under both domains. The present research work proposes a synchronous model to assess the level of synchronization of any engineering environment and to study processing systems closely by identifying their constraints, suggesting means and methods to synchronize them by minimizing the constraints and analyzing their synchronicity levels at different situations by applying and implementing synchronous manufacturing thoughts, principles, tools and strategies. As such, it was evolved to undertake a few research assignments at local companies/factories and at a few prominent industries in Bangalore region.